Last Updated: January 2000

Occidental Chemical Corporation - Buffalo Avenue

EPA ID Number: NYD000824482

Other (Former) Names of Site

None

Site Facts

The Occidental Chemical Corporation's (OCC) Buffalo Avenue facility is located at 4700 Buffalo Avenue in Niagara Falls, New York, on the east bank of the Niagara River between Lake Erie and Lake Ontario. The plant occupies approximately 160 acres, employs about 800 people, and operates, for the most part, 24 hours a day, seven days a week. The plant produces both organic and inorganic chemicals. Some of the major products include monochlorotoluene, parachlorobenzotriflouride, benzoyl chloride, hydrochloric acid, chlorine, hydrogen, sodium hydroxide, and sodium hypochlorite. Hazardous wastes are generated as a result of some production activities.

Site Responsibility and Lgal Instrument

Corrective action at this facility is governed by a New York State Part 373 Permit.

Potential Threats and Contaminants

As a result of the Respurce Conservation and Recovery Act (RCRA) facility investigation (RFI), Occidental has concluded that hazardous waste constituents have been released to the soil and groundwater beneath the facility.

The New York State Department of Environmental Conservation (NYSDEC) considers the soil and groundwater of the entire facility to be contaminated. The most significant areas of contamination are located in the C-Area, D-Area, F-Area, M-Area, N-Area, U-Area, T-Area and Mercury Cell Area. The releases are related to spills and leaks from past manufacturing activities. The hazardous waste contaminants are present in the soil and groundwater as aqueous (dissolved) phase contaminant plumes and as dense non-aqueous phase liquids (DNAPL).

Aqueous phase contamination has been observed at the facility in the soils and unconsolidated sediments above the bedrock (the "overburden") and in the bedrock. The

extent of the aqueous phase contamination plume in the overburden appears to be limited to the facility property. However, the extent of the aqueous phase contamination plume in the bedrock is considerably greater.

Contamination of the D, C and B zones (separate water-bearing zones in the upper 125 feet of bedrock) extends from the facility to the Fall Street Tunnel, approximately 1,800 feet to the north of the facility, and to the New York Power Authority conduit drains that run near the western boundary of the property. Aqueous phase contamination has also infiltrated into the sanitary sewers and outfall sewers at the facility. The overburden and bedrock dense non-aqueous phase liquids (DNAPL) plumes are largely confined to the site.

Cleanup Approach and Progress

During the course of investigating and evaluating site conditions, Occidental Chemical Corp. implemented a number of interim corrective measures (ICMs) designed to mitigate the impacts associated with the observed contamination. The implemented ICMs include:

- Bedrock Groundwater
- Extraction wells along the downgradient west and northwest plant boundaries in the D, C, and B Zones
- Dense non-aqueous phase liquids (DNAPL) collection from on-site bedrock wells
- Overburden Groundwater
- Installation of trenches for passive groundwater collection along the southern and southwestern boundaries of the site
- Installation of a barrier wall along the Niagara River
- Overburden Soil
- Dense non-aqueous phase liquids (DNAPL) recovery (when sufficient quantity is encountered) and treatment of recovered DNAPL
- Effectively containing migration of dioxin and elemental phosphorus contamination by capping these areas and adding surface drainage control
- Demolition of a former mercury cell processing building and removal of elemental mercury from the soils and fill beneath the building
- Maintenance of capped and existing hard surfaced areas

Occidental has completed corrective measures studies (CMS) of the following:

- Bedrock Groundwater Remediation, August 1992
- Overburden Groundwater Remediation, January 1994
- Overburden Soils, August 1996
- Final Corrective Measures Study, November 1998

Based on the results of the corrective measures studies and performance monitoring data generated as part of the interim corrective measures projects, New York State Department of Conservation (NYSDEC) has determined that the interim corrective measures implemented for the bedrock groundwater flow are capable of achieving the goals of the

corrective action program and are protective of human health and the environment.

Pumping from the bedrock along the west and northwest property boundaries is an effective way to draw in and treat groundwater from both on- and off-site. Any bedrock groundwater beneath the plant is captured by the extraction wells before migrating off-site. In addition, off-site bedrock groundwater adjacent to the site is drawn back to the extraction wells. The collected groundwater is then treated to remove the chemicals.

The hydraulic and chemical monitoring results show that the extraction system is operating effectively. The hydraulic monitoring data show that hydraulic containment along the plant boundary has been achieved in the bedrock D, C and B Zones, and in some cases extends well beyond the plant boundary. The chemical monitoring data obtained from the off-site monitoring wells since pumping began in April 1996 have shown that there has been a decrease in the level of organic compounds in the groundwater; a decrease attributable to the groundwater containment and extraction.

The collection of dense non-aqueous phase liquids (DNAPL) from on-site bedrock wells has removed significant quantities of DNAPL from the bedrock and is reducing the chemical source in the groundwater.

The sanitary sewer network beneath the plant is constructed to allow limited infiltration of groundwater into the system, which provides a means for collection and treatment of the groundwater. The infiltrated groundwater and associated chemical loading flows to the City of Niagara Falls wastewater treatment plant and is treated prior to discharge to the Niagara River. Collection of groundwater in the sewers in the middle of the plant results in considerably less contaminated groundwater migrating across the plant perimeter.

The facility's outfall sewer system is currently monitored under the DEC-issued State Pollution Discharge Elimination System (SPDES) permit. Occidental will continue to implement corrective measures to the outfall system as dictated by SPDES monitoring. Previous corrective measures made to the outfall system have been very effective in reducing groundwater infiltration. Similarly, the discharge of the sanitary sewer is continuously monitored to confirm that the effluent is within discharge limits set by the city's wastewater treatment plant. Consequently, it is occasionally necessary for Occidental to implement corrective measures on the sanitary sewers to address specific groundwater infiltration situations.

Monitoring data indicate that the bedrock groundwater extraction system is restricting off-site chemical migration, as chemical concentrations have decreased over time. Chemicals off-site are being drawn back toward the plant where they are captured by the extraction system.

Deed restrictions and standard operations procedure also have been implemented. The standard operating procedures guide excavations at the plant so that chemical migration and worker exposure are prevented, and groundwater does not infiltrate potable water

mains after repairs are made. If additional dense non-aqueous phase liquids (DNAPL) is encountered, it can be removed because personnel and equipment are available. Exposed contaminated soil has been capped with gravel, asphalt or clean topsoil.

An exposure or environmental risk may exist if the groundwater remedial system should fail, although the technology is reliable and readily controlled. If it fails, the monitoring equipment will detect the failure and trigger the implementation of corrective actions. Long-term protection of workers and the public will be ensured by deed restrictions, implementation of institutional controls such as SOPs for excavation and water main repair, maintenance of the plant perimeter fence, and DNAPL volume reduction.

Permit Status

The facility's RCRA operating permit is current and does not expire until 2005. The facility is allowed to incinerate various wastes from its remedial sites in western New York State and specific wastes from its Taft, Louisiana, facility. The facility is also permitted for storage in tanks, drums and other containers.

Site Repository

Copies of supporting technical documents and correspondence cited in this fact sheet are available for public review at:

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